

# PATENT SPECIFICATION

(11) 1423 154

- 1423 154  
 (21) Application No. 56570/72 (22) Filed 7 Dec. 1972  
 (23) Complete Specification filed 6 Dec. 1973  
 (44) Complete Specification published 28 Jan. 1976  
 (51) INT CL<sup>2</sup> A63H 3/36//3/46  
 (52) Index at acceptance  
 A6S 1B 1F1  
 (72) Inventor WILLIAM ALEC GIBSON PUGH



## (54) IMPROVEMENTS IN OR RELATING TO DOLLS AND TOYS

- (71) We, PALITTOY, LIMITED, a Corporation organised and existing under the laws of the State of Delaware, United States of America, of Owen Street, Coalville, Leicester, England, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention relates to dolls and toys and more particularly to hands and feet for dolls and the like.
- The hands of conventional dolls are not generally prehensile in the sense of being capable of firmly gripping objects of various shapes and sizes.
- According to one feature of the present invention there is provided a prehensile extremity for attachment to a doll or toy comprising a plastics material having a Shore A hardness of from 35 to 70, preferably 40 to 65; a Lupke resilience coefficient of from 55 to 75, preferably 60 to 70; a tensile strength of from 40 to 120 kg/cm<sup>2</sup>; and an elongation at break of from 400 to 750, preferably 550 to 650.
- Lupke resilience coefficients may be measured in accordance with British Standard No. 903 Part A1963. "Elongation at break" is calculated by subtracting the initial distance between two reference lines on the sample from the distance between the reference lines at breaking point and expressing the result as a percentage of the initial distance, see BS 903 Part A2, 1971, and BS 903 Part A2, 1956.
- According to a further feature of the present invention there is provided a doll or toy having a prehensile extremity according to the invention as hereinbefore defined.
- The plastics used in accordance with the present invention may, for example, be formed from thermoplastic rubber block copolymers comprising three blocks in the configuration A—B—A where A represents an amorphous polymer which has a glass transition temperature above room temperature (i.e. a thermoplastic), and B represents an amorphous polymer which has a glass transition temperature well below room temperature (i.e. a rubber). The use of such a block copolymer enables prehensile extremities to be produced by conventional moulding techniques.
- The thermoplastic component of the block copolymer will generally be polystyrene. The rubber component will generally be a polydiene chain of either polybutadiene or polyisoprene. Suitable thermoplastic rubber block copolymers are marketed by Shell Chemicals UK Limited under the Trade Mark "Kraton", the particular copolymers Kraton 3200 and Kraton 3226, which have the parameters set out in the Table, and compounds and mixtures thereof having been found to be especially suitable. Suitable copolymers are also marketed by Polyfleet Limited.

TABLE

	Kraton 3200 Polyfleet 04/- 60—65	Kraton 3226 Polyfleet 01/- 40—45
Hardness, Shore A		
Tensile Strength (kg/cm <sup>2</sup> )	105	45
Elongation at break	650	640
Resilience Coefficient, Lupke (% rebound)	65	65

As stated hereinbefore dolls' hands may be moulded from thermoplastic rubber block copolymers of the type described above using conventional moulding techniques. The hands

may, if desired, be moulded around an insert adapted to be attachable to a doll's arm. Alternatively, the hands may be moulded such that the wrist is provided with an aperture adapted to receive an insert adapted to be attachable to a doll's arm. The insert is then inserted into the hand and secured thereto, e.g. by means of an adhesive. The insert should be formed of a polymer having a softening point higher than that of the thermoplastic rubber block copolymer, e.g. a nylon. Nylon 6 has been found to be particularly suitable for use as an insert, but other polymers such as polypropylenes and polyurethanes can be used if so desired.

The accompanying drawings further illustrate the present invention. Figure 1 is a drawing in perspective of a hand moulded around an insert in accordance with the present invention; Figure 2 and 3 are respectively a front elevation and an end elevation showing the insert in more detail; Figures 4 and 5 show an arm insert adapted to engage with the hand insert of Figures 2 and 3 such that arm and wrist insert are pivotable with respect to each other. It will be noted that the hand has two fingers moulded together. In general, it is convenient to strengthen moulded hands in accordance with the present invention by moulding two or more fingers together.

Moulded dolls' hands formed according to the present invention are particularly suitable for attachment to articulated dolls of the type described in British Patent Specification 1007215, such articulated dolls thereby being provided with greater realism. The dolls are thus for example able to grip articles such as model weapons, binoculars and other similar hands in a realistic manner.

If desired, the dolls' hands according to the present invention may be hollow to allow for the provision inside the hand of means for making the hand, or an article gripped thereby, move.

As will be readily appreciated, prehensile feet may also be formed from thermoplastic rubber block copolymers of the type described above should it be desired to provide a doll, toy animal or the like with prehensile feet. It may also be desired to provide a toy animal with a prehensile tail; such tails may also be

formed from thermoplastic rubber block copolymers of the type described above.

#### WHAT WE CLAIM IS:—

1. A prehensile extremity for attachment to a doll or toy comprising a plastics material having a Shore A hardness of from 35 to 70; a Lupke resilience coefficient of from 55 to 75; a tensile strength of from 40 to 120 kg/cm<sup>2</sup>; and an elongation at break of from 400 to 750. 55
2. prehensile extremity as claimed in claim 1 wherein the said plastics material has a Shore A hardness of from 40 to 65. 60
3. A prehensile extremity as claimed in claim 1 or claim 2 wherein the said plastics material has a Lupke resilience coefficient of from 60 to 70. 65
4. A prehensile extremity as claimed in any of the preceding claims wherein the said plastics material is formed from a thermoplastic rubber block copolymer comprising three blocks in the configuration A—B—A where A represents a thermoplastic amorphous polymer and B represents a rubber. 70
5. A prehensile extremity as claimed in claim 4 wherein the said thermoplastic amorphous polymer is polystyrene. 75
6. A prehensile extremity as claimed in claim 4 or claim 5 wherein the said rubber is polybutadiene or polyisoprene. 80
7. A prehensile extremity as claimed in any of the preceding claims in the form of a hand for attachment to a doll. 85
8. A prehensile extremity as claimed in any of the preceding claims wherein the said plastics material has an elongation at break of from 550 to 650. 90
9. A doll's prehensile hand substantially as herein described with reference to Figure 1 of the accompanying drawings.
10. A doll or toy provided with a prehensile extremity as claimed in any of the preceding claims.

For the Applicants,  
FRANK B. DEHN & CO.,  
Imperial House,  
15—19 Kingsway,  
London WC2B 6UZ.

1423154

COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of  
the Original on a reduced scale

